

App. No. 10/780,375
Amendment Dated November 15, 2006
Reply to Office Action of May 25, 2006

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REMARKS/ARGUMENTS

Claims 1 – 32 are pending in this application. Claims 1 – 15 are withdrawn from consideration. Claims 16 - 32 are rejected under 35 USC § 102(e). Claims 16 – 20, 22, 23, 25, 26, 28, 29, 31 and 32 are amended. Claims 21, 24, 27 and 30 are cancelled. No new matter has been added. In view of the following remarks, reconsideration and allowance of all pending claims are respectfully requested.

Claims 16 and 19 have been amended to clarify issues for a more exact examination. Claims 21, 24, 27 and 30 are cancelled since pertinent parts of those claims are now reflected in amended claims 16 and 19. Claims 17, 18, 20, 22, 23, 25, 26, 28, 29, 31 and 32 are amended to place their language in conformity with now amended claims 16 and 19, and not to overcome any basis of rejection.

Claim Rejections under 35 U.S.C. § 102(e)

Claims 16 – 32 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,828,766 to *Corva* et al.

Applicant has thoroughly reviewed the *Corva* reference and believes that at least the following limitation is not taught by any of the cited references as are found in Applicant's amended claim 16:

“measuring ... a first slope associated with the current flowing in the inductor;
providing a measurement signal ... indicative of the first slope;
dynamically adjusting a second slope associated with a ramp signal in response to the measurement signal; and
compensating a response associated with a control loop ... responsive to changes in inductor current slope”

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Applicant further believes that similar claim elements found in claim 19, described below, are also not taught, disclosed, or otherwise suggested by the cited references:

“a means for measuring ... a first slope associated with the current flowing in the inductor;
a means for providing a measurement signal ... indicative of the first slope;
a means for dynamically adjusting a second slope that is associated with a ramp signal in response to the measurement signal; and
a means for compensating a response that is associated with a control loop ... responsive to changes in the first slope associated with the current flowing in the inductor via the measurement signal.”

Regarding claims 16 and 19, the Office Action states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator as illustrated by FIGS. 2 and 7 of *Corva*. The Office Action alleges that in the *Corva* reference OSCILLATOR serves as a means for adjusting a slope via SLOPE GEN to generate a ramp signal that is adjusted in response to the measurement signal (R_{seqI_L}), citing as support col. 2 at lines 4- 10. After a thorough review of the *Corva* reference, Applicants' respectfully disagree with this interpretation.

The *Corva* reference does not teach adjusting the slope of the ramp signal in response to a measurement signal for slope compensation. Indeed, the term “slope compensation” only appears one time in the entire reference at col. 2, line 67, which is the background/prior art discussion section. Moreover, the only other time the text refers to the term “slope” is in referring to “SLOPE GEN” in the prior art discussion of col. 2 at lines 8 and 67. At

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no point anywhere in the text of the *Corva* reference is their a single instance of a discussion concerning dynamically adjusting the actual slope of the ramp based on the measurements from the inductor, nor is there any discussion of adjusting the ramp based on any other criteria.

After a thorough review of the *Corva* reference, Applicants' believe that the variety of slope compensation that is described in *Corva* is a conventional method where a single fixed slope ramp is provided as an input to a comparator. SLOPE GEN has a single output to the current comparator, one input which corresponds to the clock signal from OSCILLATOR, and one other input that corresponds to the SLEEP signal from SLEEP COMPARATOR. There are not other inputs to SLOPE GEN that are described, taught or otherwise suggested in the *Corva* reference. As will be described below, none of these inputs has anything to do with the slope of the ramp signal from SLOPE GEN.

The output of OSCILLATOR is a conventional clock signal (see col. 2, line 4). There is no further discussion anywhere in the text of *Corva* concerning the interaction of the clock signal from OSCILLATOR and SLOPE GEN. Nor is there any suggestions, teachings, or inferences to be drawn from the figures of *Corva* other than the clock signal that is generated by OSCILLATOR is an input to SLOPE GEN. It is entirely unclear to the Applicants how a simple clock signal, without any further discussion in the text or figures of *Corva*, is utilized by SLOPE GEN for anything other than a reset trigger for the ramp signal. Moreover, the SLEEP signal from the output of the sleep comparator does not result in any adjustment to the ramp signal, and instead only disables SLOPE GEN, OSCILLATOR and Gm (see col. 2, lines 62 – col. 3, line 1). Since nothing in the *Corva* reference describes, teaches, or otherwise suggests that the ramp

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signal from SLOPE GEN is adjusted, such conclusions are unsupported and only found through the use of impermissible hindsight reconstruction.

As described above, nothing in the *Corva* reference describes, teaches, or otherwise suggests that a slope associated with a ramp signal is adjusted in response to the measurement signal as is described in Applicants' claims 16 and 19. It is respectfully submitted that the rejection is overcome by the above amendments and remarks, and notice to that effect is requested.

Regarding claims 17, 18, 22, 23, 25 and 26 further limit claim 16, from which they depend. For the reasons stated above claim 16 is proposed to be allowable, and claims 17, 18, 22, 23, 25 and 26 should be allowable for at least those reasons as well as any other further limitations they recite.

Regarding claims 20, 28, 29, 31 and 32 further limit claim 19, from which they depend. For the reasons stated above claim 19 is proposed to be allowable, and claims 20, 28, 29, 31 and 32 should be allowable for at least those reasons as well as any other further limitations they recite.

Regarding claim 17, the Office Action states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator, where SLOPE GEN includes the ability to adjust the slope of the ramp signal by a number of methods such as: dynamically changing a capacitance value, and dynamically changing a charging current that is associated with the ramp generator circuit, as is described in Applicants' claim 17. *Corva* does not provide a single discussion or figure that illustrates a slope generator circuit other than a block labeled SLOPE GEN. Since nothing in the *Corva* reference supports either of these

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examples, such conclusions are only reached with impermissible hindsight reconstruction and the rejection must therefore be withdrawn.

Regarding claim 18 and 20, the Office Action states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator, including a means for monitoring a reference signal that is related to an output voltage of the switching regular via CONTROL LOGIC. It is entirely unclear where any support for this conclusion is found. Nowhere in the text and figures of *Corva* is there a description of a reference signal being input to the CONTROL LOGIC. The only signals provided to the control logic are digital signals such as CLOCK, SLEEP, the digital output of CURRENT COMPATOR, and the digital output from ZERO-CROSSING COMP. Since all of these inputs are digital signal, none of them are reference signals that are related to an output voltage. Since nothing in the *Corva* reference supports describes Applicants' claimed subject matter of claims 18 and 20, such conclusions are only reached with impermissible hindsight reconstruction and the rejection of claim 18 and 20 must therefore be withdrawn.

Although claims 21 and 27 are cancelled, their limitations are now found in amended claims 16 and 19. Regarding claims 21 and 27, the Office Action states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator, where a current slope associated with current flowing in the inductor is measured by CONTROL LOGIC. It is again entirely unclear where any support for this conclusion is found in *Corva*. Nowhere in the text and figures of *Corva* is there a description of "measuring a current slope" with the CONTROL LOGIC. As described previously, the only signals provided to the control logic are digital signals. Since all of the inputs are digital signals, none of them

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can be perceived as a slope signal. Since nothing in the *Corva* reference supports describes Applicants' claimed subject matter of claims 21 and 27, such conclusions are only reached with impermissible hindsight reconstruction and the rejection must therefore be withdrawn.

Regarding claim 22 and 28, the Office Action again states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator, where the slope of the ramp signal is adjusted by SLOPE GEN in response to the measured current slope. For those reasons stated above with respect to claims 16 and 19, nothing in the *Corva* reference supports these conclusions. Moreover, nothing in the *Corva* reference describes, teaches, or otherwise suggests the limitations of claims 22 and 28 for matching slopes according to their described criteria and the rejection must therefore be withdrawn

Claims 24 and 30 are cancelled since their pertinent parts are now reflected in amended claims 16 and 19. Regarding claim 23, 24, 29 and 30, the Office Action again states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator, where the slope of the ramp signal (via OSCILLATOR) is dynamically adjusted in response to the monitored output voltage that is monitored by CONTROL LOGIC, where the slope of the current in the inductor is measured by CURRENT COMPARATOR. For the reasons stated above with respect to claims 18 and 20, nothing in the *Corva* reference supports the statement that CONTROL LOGIC monitors an output voltage. Moreover, nothing in the *Corva* reference teaches that the CURRENT COMPARATOR measures a slope of the inductor and provides a measurement signal indicative thereof. Since the output of CURRENT COMPARATOR is a digital output, it is entirely unclear how the binary output corresponds to a slope measurement. Since nothing in *Corva* further illuminates this position, it is believed that

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such conclusions are reached through impermissible hindsight reconstruction and the rejection must therefore be withdrawn

Regarding claims 25 and 31, the Office Action states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator, where a means for monitoring an output voltage to provide a first current signal is provided via CONTROL LOGIC, a second current signal is generated as measurement signal without any recitation as to how, the comparator sums the first and second current signals, and the SLOPE GEN adjusts the ramp signal in response to the sum of the current signals. It is again entirely unclear where any support for these conclusions are found in *Corva*. Nowhere in the text and figures of *Corva* is there a description of "monitoring an output voltage" to "provide a first current signal" with the CONTROL LOGIC. As described previously, the only signals provided to the control logic are digital signals. Since all of the inputs are digital signals, none of them can be perceived as an output voltage. There is also nothing to support that a first current signal is provided by the CONTROL LOGIC. It equally unknown as to where any support in *Corva* is provided for the COMPARATOR summing currents. Furthermore, the output of the comparator does not go to SLOPE GEN, so it is not possible to conclude that the SLOPE GEN adjusts the ramp in response to the sum of the currents (since presumably that is from the comparator). Since nothing in the *Corva* reference supports describes Applicants' claimed subject matter of claims 25 and 31, such conclusions are only reached with impermissible hindsight reconstruction and the rejection must therefore be withdrawn.

Regarding claim 26 and 32, the Office Action states that the *Corva* reference discloses an apparatus and method for adjusting slope compensation in a switching regulator,

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where adjusting the slope associated with the ramp signal is accomplished by the SLOPE GEN such that an integration of the sum of the first current signal and the second current signal is accomplished with a capacitor circuit. Nothing in *Corva* supports this conclusion, and indeed no direction is provided in the Office Action as a basis of rejection. As previously stated with respect to claims 16 and 19, there is no support in *Corva* that SLOPE GEN has a dynamically adjusted a slope associated with the ramp signal. There is furthermore no detailed description or other support for integration with a capacitor in SLOPE GEN, which is only perceived with hindsight reconstruction. Since nothing in the *Corva* reference describes Applicants' claimed subject matter of claims 26 and 32, such conclusions are only reached with impermissible hindsight reconstruction and the rejection must therefore be withdrawn.

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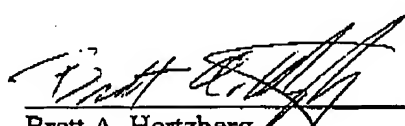
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CONCLUSION

In view of the foregoing remarks, all pending claims are believed to be allowable and the application is in condition for allowance. Therefore, a Notice of Allowance is respectfully requested. Should the Examiner have any further issues regarding this application, the Examiner is requested to contact the undersigned attorney for the applicant at the telephone number provided below.

Respectfully submitted,

MERCHANT & GOULD P.C.



Brett A. Hertzberg
Registration No. 42,680
Direct Dial: 206.342.6255

MERCHANT & GOULD P.C.
P. O. Box 2903
Minneapolis, Minnesota 55402-0903
206.342.6200
[BAH/ab]

